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PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application of Timothy J. Blenke, et al.      Art Unit 1773  
Serial No. 10/743,222  
Filed      December 22, 2003  
Confirmation No. 7640  
For ULTRASONIC BONDING OF DISSIMILAR MATERIALS  
Examiner Kevin A. Kruer

July 27, 2007

APPEAL BRIEF

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**APPEAL BRIEF**

This is an appeal from the final rejection of the claims of the above-identified application made in the Office action dated March 19, 2007. A Notice of Appeal was submitted via electronic filing on June 14, 2007.

**I. REAL PARTY IN INTEREST**

The real party in interest in connection with the present appeal is Kimberly-Clark Worldwide, Inc. of 401 N. Lake Street, Neenah, Wisconsin 54957-0349, a corporation of the state of Delaware, owner of a 100 percent interest in the pending application.

**II. RELATED APPEALS AND INTERFERENCES**

Appellants are aware of three pending appeals, which may be related to, directly affect or be directly affected by, or have a bearing on, the Board's decision in the pending appeal. Specifically, there are pending appeals in the related cases of U.S. Application No. 09/945,239 (filed August 31, 2001); 10/260,951 (filed on September 30, 2002); and 10/266,440 (filed on October 8, 2002).

### **III. STATUS OF CLAIMS**

Claims 1-16, 26-42, 52-68, 78-94, and 104 are currently pending in the application. Claims 11, 12, 14, 15, 27-42, 52-68, 78, 89, 90, 92, and 93 have been withdrawn as directed to a non-elected invention. Applicants reserve the right to file divisional applications directed to these non-elected claims. A copy of the pending claims appears in the Claims Appendix of this Brief.

Claims 1-10, 13, 16, 26, 79-88, 91, 94, and 104 stand rejected under 35 U.S.C. §102(b). The rejection of claims 1-10, 13, 16, 26, 79-88, 91, 94, and 104 under 35 U.S.C. §102(b) is being appealed.

### **IV. STATUS OF AMENDMENTS**

No amendments have been filed after the final rejection.

### **V. SUMMARY OF CLAIMED SUBJECT MATTER**

The following summary correlates claim elements to specific embodiments described in the application specification, but does not in any manner limit claim interpretation. Rather, the following summary is provided only to facilitate the Board's understanding of the subject matter of this appeal.

Disposable absorbent articles, such as adult incontinence articles and diapers, are generally manufactured by adhesively bonding several components together to form a laminated structure. Frequently, one or more components of a disposable absorbent article are first adhesively, and then ultrasonically

bonded together to ensure adequate strength of the resulting bond. In many cases, the bonding together of two components forms a laminated structure in which adhesive is sandwiched between materials that make up the components being bonded together. Once the laminated structure is formed, the laminate will typically undergo an ultrasonic bonding process to impart increased strength in the bonded area of the laminate.<sup>1</sup> Although commonly utilized in the production of laminated absorbent articles, ultrasonic bonding can become problematic when dissimilar materials are utilized. That is, the ultrasonic bonding of polymer based films or non-woven materials that have melting points that vary greatly from each other can be very difficult, or even impossible to accomplish as a polymer with a lower melt temperature will soften and dissipate away from the bonding zone before the polymer material with the higher melting point will soften.<sup>2</sup>

As such, the present invention is directed to laminated structures made of dissimilar materials that are bonded together using a hot melt adhesive composition and then ultrasonically bonded to provide an improved bond between the materials. In one specific embodiment, as set forth in independent claim 1, the present invention is directed to an article comprising an ultrasonically bonded laminated structure. The laminated structure comprises a first material, a second material, and an adhesive composition.<sup>3</sup> The adhesive composition comprises an atactic polymer and an isotactic polymer.<sup>4</sup> The atactic polymer has a degree of crystallinity of less than about 20% and a number-average molecular weight of

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<sup>1</sup> Specification at page 2, paragraph 3.

<sup>2</sup> Specification at page 3, paragraph 5.

<sup>3</sup> Specification at page 7, paragraph 14.

<sup>4</sup> Specification at page 17, paragraph 38.

from about 1,000 to about 300,000.<sup>5</sup> The isotactic polymer has a degree of crystallinity of at least about 3,000 to about 200,000.<sup>6</sup> The first material and the second material are dissimilar materials and are ultrasonically bonded together.<sup>7</sup>

In another specific embodiment, as set forth in independent claim 79, the adhesive composition further has an open time of less than about minutes.<sup>8</sup>

## **VI. GROUND OF REJECTION TO BE REVIEWED ON APPEAL**

The claims 1-10, 13, 16, 26, 79-88, 91, 94, and 104 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Zhou et al. (U.S. 2002/0123538A1).

## **VII. ARGUMENT**

### **Rejection of Claims 1-10, 13, 16, 26, 79-88, 91, 94, and 104 under 35 U.S.C. §102(b)**

Claims 1-10, 13, 16, 26, 79-88, 91, 94, and 104 have been rejected under 35 U.S.C. § 102(b) as being anticipated by Zhou et al. (U.S. 2002/0123538A1).

Claim 1 is directed to an article comprising an ultrasonically bonded laminated structure. The laminated structure comprises a first material, a second material, and an adhesive composition. The adhesive composition comprises an atactic polymer and an isotactic polymer. The atactic polymer has a degree of crystallinity of less than about 20% and a

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<sup>5</sup> Specification at pages 17-18, paragraph 39.

<sup>6</sup> Id.

<sup>7</sup> Specification at page 7, paragraph 14; page 10, paragraph 23; and page 12, paragraph 26..

<sup>8</sup> Specification at pages 19-20, paragraph 44.

number-average molecular weight of from about 1,000 to about 300,000. The isotactic polymer has a degree of crystallinity of at least about 40% and a number-average molecular weight of from about 3,000 to about 200,000. The first material and the second material are dissimilar materials and are ultrasonically bonded together. As defined in paragraph 23 of the instant specification, the term "dissimilar" means that the materials have melting temperatures that vary by more than about 40°F, and have dissimilar molecular structures such that upon ultrasonic bonding, the materials are not brought together as one material and typically have macro-phase separation.

Zhou et al. ('538) disclose adhesive compositions comprising selected ratios of crystalline and amorphous polymers. Specifically, one adhesive composition of the invention comprises an atactic polymer having a degree of crystallinity of about 20% or less and a number-average molecular weight of from about 1,000 to about 300,000, and an isotactic polymer having a degree of crystallinity of about 40% or more and a number-average molecular weight of from about 3,000 to about 200,000. One preferred adhesive composition blends a selected amount of isotactic polypropylene with a selected amount of atactic polypropylene.

The '538 reference also discloses methods of making laminated structures and disposable absorbent articles employing the adhesive composition. The laminated structures comprise a first layer and a second layer, wherein at least a portion of the first layer is attached to at least a portion of the second layer using an adhesive composition. The first layer, second layer, or both may comprise a variety of materials including a nonwoven, a film, a woven material, an elasticized component, or a substrate comprising cellulosic



material, thermoplastic material, or both. Examples of materials or webs bonded together by the adhesive to form the laminated structures of '538 include necked-bonded laminates (NBL)<sup>9</sup>, polypropylene, spunbonded layers, stretched-bonded laminates (SBL)<sup>10</sup>, and an outer cover comprising a polyethylene layer and a polypropylene, spunbonded layer.<sup>11</sup> Additionally, the '538 reference discloses that the resulting laminated materials may be exposed to ultrasonic energy.

The '538 reference, however, fails to disclose a laminated structure comprising an adhesive, a first material and a second material, wherein the first and second materials are dissimilar materials that are ultrasonically bonded together. As noted above, "dissimilar" means that the materials have melting temperatures that vary by more than about 40°F and have dissimilar molecular structures. These are requirements of claim 1 and are significant aspects of Applicants' invention.

In the Response to Arguments section of the final Office action dated April 5, 2006, the Office asserts that Applicants' argument that '538 fails to disclose a laminated structure comprising an adhesive, a first material and a second material, wherein the first and second material are dissimilar materials is not persuasive as '538 teaches a composition that may be utilized to bond two materials together wherein the two materials may be the same or different than each other.<sup>12</sup> While the reference does disclose that the materials comprising the laminate may be "different," Applicants respectfully assert

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<sup>9</sup> As defined in '538, a necked-bonded laminate substrate (NBL) generally comprises a polyethylene layer sandwiched between two polypropylene, spunbonded layers. Paragraph 59.

<sup>10</sup> As defined in '538, a stretch-bonded laminate (SBL) generally comprises an elongated elastic web or elastomeric strands bonded between two spunbonded layers. Paragraph 130.

<sup>11</sup> The '538 reference at paragraph 59.

that '538 does not teach a first and second material being dissimilar materials; that is, having melting temperatures that vary by more than about 40°F, and having dissimilar molecular structures such that upon ultrasonic bonding, the materials are not brought together as one material and typically have macro-phase separation. As such, the "different" materials term as disclosed by '538 is not, and cannot be, equivalent to "dissimilar materials" as required by claim 1.

Furthermore, in the Advisory Action mailed May 25, 2007, the Office asserts that the Office does recognize the distinction between "different" materials and "dissimilar" materials; however, the Office argues that '538 should be understood to anticipate the "dissimilar" limitation of the claim. Specifically, the Office states that '538 teaches the bonding of an outer cover comprising polyethylene and a polypropylene layer utilizing the adhesive composition that is understood to read on the claimed adhesive. Applicants' respectfully disagree, as no where in '538 is it taught or suggested to ultrasonically bond dissimilar materials using the adhesive composition.

Specifically, as disclosed in the instant specification, examples of dissimilar materials that can be ultrasonically bonded together utilizing the adhesive composition of claim 1 include: (1) neck-bonded laminates to pattern unbonded materials and (2) spunbond meltblown to woven polyester knit.<sup>13</sup> A close review of the working Examples of the '538 reference, however, shows that the laminated structures made using the adhesive composition of '538 are produced using a first and second material that are similar or compatible. Specifically,

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<sup>12</sup> See page 4 of the final Office action.

<sup>13</sup> Instant specification at page 11, paragraph 24.

the only examples of laminated structures in the '538 reference are made by bonding a polypropylene layer to a polypropylene layer.<sup>14</sup> For example, Example 2 uses laminates comprising a NBL bonded to a NBL. As such, the two outside polypropylene, spunbonded layers of the NBLs are adhered together using the composition of '538. Similarly, Example 3 uses laminates comprising two polypropylene, spunbonded substrates together and Example 6 uses laminates comprising a NBL bonded to a SBL. Examples 4-5 use laminates comprising a NBL bonded to an outer cover material comprising a polyethylene layer and a polypropylene, spunbonded layer. As noted in '538, however, in both Examples 4 and 5, the polypropylene, spunbonded layer of the outer cover material is contacted with the adhesive composition and bonded to the NBL; that is, the polyethylene layer of the outercover is **not** bonded to the polypropylene layer of the NBL as suggested by the Office. As such, all of the working examples support a laminated substrate being made by bonding similar first and second materials with the adhesive composition of '538. Additionally, and importantly, none of the working Examples in '538 utilize ultrasonic bonding with any of the laminates.

In the Response to Arguments section of the instant final Office action, the Office asserts that it is improper for Applicants to limit their argument to preferred embodiments and examples of the '538. Applicants assert that the Federal Circuit has stated that "even if the claimed invention is disclosed in a printed publication, that disclosure will not suffice as prior art if it was not enabling." *In re Donohue*, 766 F.2d 531, 533 (Fed. Cir. 1985), citing *In re Borst*, 345

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<sup>14</sup> '538 at paragraph 59 and Examples 2-6.

F.2d 851, 855, 145 USPQ 554, 557 (CCPA 1965).<sup>15</sup> While it is true that anticipation does not require the teaching in the prior reference to be in the exact words of the claimed subject matter, it does require sufficient enabling disclosure with respect to the entirety of the claimed invention; that is, in this present case there must be an enabling disclosure of how to ultrasonically bond dissimilar materials as required in Applicants' claim 1. This is lacking in the '538 reference, as '538 provides no disclosure, in the working Examples or otherwise, as to how to ultrasonically bond such materials.

Furthermore, in the Office action dated October 10, 2006, and, again in the instant final Office action, the Office states that the adhesive of '538 may be utilized to laminate absorbent articles such as those incorporated by reference in paragraph 0072. Specifically, the Office cites to U.S. 5,176,668 ('668) and U.S. 5,904,672 ('672), which are incorporated by reference, for providing composite materials, laminates, and disposable absorbent articles with which adhesives of the '538 reference may be utilized. Applicants respectfully assert that, while references such as '668 and '672 disclose articles comprising a polypropylene liner and a polyethylene outer film, nowhere in the '668 or '672 references or in any of the other references incorporated into '538 is it disclosed or suggested to ultrasonically bond a first material and a second material that are dissimilar materials as required in claim 1.

Specifically, the Office cites to col. 7, lines 24+

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<sup>15</sup> See also MPEP §2121.01, which states "[t]he disclosure in an assertedly anticipating reference must provide an enabling disclosure of the desired subject matter; mere naming or description of the subject matter is insufficient, if it cannot be produced without undue experimentation." (citing *Elan Pharm., Inc. v. Mayo Found. For Med. Edu. & Research*, 346 F.3d 1051, 1054, 68 USPQ2d 1373, 1376 (Fed. Cir. 2003)).

(Example 1) in the '668 reference as showing an absorbent article comprising a polypropylene liner and a polyethylene outer film. The relevant section of this passage reads:

"The diaper construction was completed by sandwiching the absorbent composite between a porous spunbonded polypropylene liner (23 g/yd<sup>2</sup>) and a polyethylene film outer cover, sealed together with adhesive at the diaper perimeter."

Significantly, no where in the '668 reference is it disclosed or suggested that the porous spunbonded polypropylene liner and the polyethylene film outer cover are ultrasonically bonded together.

The Office additionally cites to '672 at col. 6, lines 9-47 and Examples for showing bonding of polypropylene to polyethylene. In col. 6, lines 9-47, the '672 reference discloses that the moisture barrier and bodyside liner may be bonded together using ultrasonic bonds, thermal bonds, adhesives, or other suitable means. Additionally, in the Examples, the moisture barrier is comprised of a polyethylene film and the bodyside liner is comprised of a nonwoven, spunbond polypropylene that are bonded together using a construction adhesive. No where in the Examples or elsewhere in the '672 reference, however, is it taught or suggested to ultrasonically bond a polypropylene layer and a polyethylene layer together.

Similar to the '668 and '672 references, the other references incorporated into the '538 reference only disclose adhering a polypropylene layer to a polyethylene layer.<sup>16</sup> No

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<sup>16</sup> See generally, U.S. 4,798,603 at Examples 1 and 2; U.S. 5,176,672 at col. 6, lines 53-59 and col. 7, lines 23-32; U.S. 5,192,606 at Examples 2 and 5; U.S. 4,940,464 at col.5, lines 1-6 and lines 65-68 and col. 6, lines 1-3;

where in the art is it suggested or disclosed to ultrasonically bond dissimilar materials such as a polypropylene layer to a polyethylene layer.

In the Response to Arguments section of the instant final Office action, the Office asserts that Applicants' argument that neither '668 nor '672, nor any other references incorporated into the '538 reference, disclose ultrasonically bonding dissimilar materials is not persuasive as these references were not relied upon for such a teaching. Specifically, the Office asserts that '538 teaches that the adhesive composition taught therein may be used to ultrasonically bond different materials, such as those taught in '668 and '672. Applicants' respectfully disagree that '538 makes such a teaching.

Specifically, a close reading of paragraph 72 in the '538 reference discloses that the adhesive of the '538 reference may be utilized with the composite materials and laminates of references such as '668 and '672, however, no where it is disclosed that these composite materials and laminates can be ultrasonically bonded together. Moreover, the only disclosure of ultrasonic treatment in '538 is in paragraph 67, which makes no mention of the composites and laminates of the '668 and '672 references. This section of the '538 reference is separate from the section of the reference discussing the use of the adhesive composition of '538 in composites and laminates of '668 and '672. With all due respect, Applicants' assert that the Office is combining separate and distinct passages in the cited reference that cannot, and should not, be so combined; that is, the Office cannot pick and choose passages from a

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U.S. 5,904,675 at Example 4; and U.S. 5,902,297 at col. 5, lines 50-67 and col. 6, lines 18-32.

reference so as to find each and every limitation in Applicant's claim.

Moreover, the Office states in the Advisory Action dated May 25, 2007, that in response to Applicants' arguments regarding '668 and '672 references, the arguments are not persuasive as Applicants argue against the references individually and one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. With all due respect, Applicants note that claim 1 has been rejected under novelty, not nonobviousness. As such, to make a case of novelty under MPEP §2131, as noted above, the Office must show a prior art reference that discloses expressly or inherently each and every limitation of Applicant's claim. As noted above, the '538 reference, and all references cited therein, fail to set forth a sufficient enabling disclosure of ultrasonically bonding a first material and a second material that are dissimilar materials as required by claim 1. As such, the '538 reference fails to teach each and every limitation of instant claim 1. As such, claim 1 is novel and patentable over the cited reference.

Claims 2-10, 13, 16, and 26 depend directly from claim 1. As such, claims 2-10, 13, 16, and 26 are patentable for the same reasons as claim 1 set forth above, as well as for the additional elements they require.

Claim 79 is similar to claim 1 and further requires the adhesive composition to have an open time of less than about 10 minutes. As the '538 reference fails to disclose a first material and a second material that are dissimilar materials and are ultrasonically bonded together, the '538 reference fails to teach each and every limitation of instant claim 79.

As such, claim 79 is novel and patentable over the cited reference.

Claims 80-88, 91, 94, and 104 depend directly from claim 79. As such, claims 80-88, 91, 94, and 104 are patentable for the same reasons as claim 79 set forth above, as well as for the additional elements they require.

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**VIII. Conclusion**

The Office has failed to establish a *prima facie* case of anticipation pursuant to 35 U.S.C. § 102, because the Office has failed to show a reference that teaches each and every element of Applicants' claims 1-10, 13, 16, 26, 79-88, 91, 94, and 104. For these reasons, and for those more fully stated above, Appellants respectfully request the Office's rejections be reversed and claims 1-10, 13, 16, 26, 79-88, 91, 94, and 104 be allowed.

The Commissioner is hereby authorized to charge any fees which may be required to Deposit Account No. 19-1345.

Respectfully submitted,

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**CLAIMS APPENDIX**

1. An article comprising an ultrasonically bonded laminated structure, the laminated structure comprising a first material, a second material, and an adhesive composition, the adhesive composition comprising an atactic polymer and an isotactic polymer, the atactic polymer having a degree of crystallinity of less than about 20% and a number-average molecular weight of from about 1,000 to about 300,000 and the isotactic polymer having a degree of crystallinity of at least about 40% and a number-average molecular weight of from about 3,000 to about 200,000, wherein the first material and the second material are dissimilar materials and are ultrasonically bonded together.

2. The article as set forth in claim 1 wherein the degree of crystallinity of the atactic polymer is less than about 15%.

3. The article as set forth in claim 1 wherein the degree of crystallinity of the isotactic polymer is at least about 60%.

4. The article as set forth in claim 1 wherein the number-average molecular weight of the atactic polymer is between about 3,000 and about 100,000.

5. The article as set forth in claim 1 wherein the number-average molecular weight of the isotactic polymer is between about 10,000 and about 100,000.

6. The article as set forth in claim 1 wherein the adhesive composition is hot-melt processable at less than about 400 degrees Fahrenheit.

7. The article as set forth in claim 1 wherein the adhesive composition is hot-melt processable at less than about 375 degrees Fahrenheit.

8. The article as set forth in claim 1 wherein the adhesive composition has a melt index of from about 100 to about 2000 grams per 10 minutes.

9. The article as set forth in claim 1 wherein the adhesive composition comprises from about 40 to about 90 weight percent of the atactic polymer and from about 5 to about 30 weight percent of the isotactic polymer.

10. The article as set forth in claim 1 wherein the atactic polymer comprises atactic polypropylene.

13. The article as set forth in claim 1 wherein the isotactic polymer comprises isotactic polypropylene.

16. The article as set forth in claim 1 wherein the first material comprises polyethylene and the second material comprises polypropylene.

26. The article as set forth in claim 1 wherein the adhesive composition additionally comprises a further component selected from the group consisting of tackifiers, antioxidants,

color pigments, viscosity modifiers, fillers, and polymeric compatibilizers.

79. An article comprising an ultrasonically bonded laminated structure, the laminated structure comprising a first material, a second material, and an adhesive composition, the adhesive composition comprising an atactic polymer and an isotactic polymer, the atactic polymer having a degree of crystallinity of less than about 20% and a number-average molecular weight of from about 1,000 to about 300,000 and the isotactic polymer having a degree of crystallinity of at least about 40% and a number-average molecular weight of from about 3,000 to about 200,000, wherein the first material and the second material are dissimilar materials and are ultrasonically bonded together, and wherein the adhesive composition has an open time of less than about 10 minutes.

80. The article as set forth in claim 79 wherein the degree of crystallinity of the atactic polymer is less than about 15%.

81. The article as set forth in claim 79 wherein the degree of crystallinity of the isotactic polymer is at least about 60%.

82. The article as set forth in claim 79 wherein the number-average molecular weight of the atactic polymer is between about 3,000 and about 100,000.

83. The article as set forth in claim 79 wherein the number-average molecular weight of the isotactic polymer is between about 10,000 and about 100,000.

84. The article as set forth in claim 79 wherein the adhesive composition is hot-melt processable at less than about 400 degrees Fahrenheit.

85. The article as set forth in claim 79 wherein the adhesive composition is hot-melt processable at less than about 375 degrees Fahrenheit.

86. The article as set forth in claim 79 wherein the adhesive composition has a melt index of from about 100 to about 2000 grams per 10 minutes.

87. The article as set forth in claim 79 wherein the adhesive composition comprises from about 40 to about 90 weight percent of the atactic polymer and from about 5 to about 30 weight percent of the isotactic polymer.

88. The article as set forth in claim 79 wherein the atactic polymer comprises atactic polypropylene.

91. The article as set forth in claim 79 wherein the isotactic polymer comprises isotactic polypropylene.

94. The article as set forth in claim 79 wherein the first material comprises polyethylene and the second material comprises polypropylene.

104. The article as set forth in claim 79 wherein the adhesive composition additionally comprises a further component selected from the group consisting of tackifiers, antioxidants, viscosity modifiers, color pigments, fillers, and polymeric compatibilizers.

**EVIDENCE APPENDIX**

Applicants rely on the following references: U.S. Pat. Nos. 5,176,668; 5,904,672; 4,798,603; 5,176,672; 5,192,606; 4,940,464; 5,904,675; and 5,902,297 to support the above arguments. All of the above references were cited in the Office action received in the instant case on October 10, 2006 and in the final Office action received in the instant case on March 19, 2007. Furthermore, Applicants relied on the references in the Response to Office Action submitted January 9, 2007 and in the Response to Final Office Action submitted June 6, 2007. Applicants enclose herewith copies of the above references.

**RELATED PROCEEDINGS APPENDIX**

None.